

Effects of High Altitudes on the Hemolymph of Insects
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We have been studying the mitotic activity of the hemocytes and the protein concentration of the hemolymph of the milkweed bug, Oncopeltus fasciatus (Hemiptera: Lygaeidae) to see whether and how they reflect stress situations or changes in the insect's environment. To study the effects of a high altitude on the milkweed bug we took stock cultures of the bug from our laboratory at St. Louis (elevation approximately 600 feet) to the Jackson Hole Station (elevation 6,750 feet). The parameters we measured as criteria of effects of the altitude were the following: mitotic indices of the circulating hemocytes; DNA synthesis in the circulating hemocytes as determined by autoradiography; the protein concentration of the hemolymph as determined by the Lowry technique; the length of the life cycle; weights at various periods in the life cycle; and the percentage survival of the insects. We have these types of data for the milkweed bug at low elevations so that comparisons can be made. Most of the data collected during the three month period still has to be analyzed statistically. The most striking result was the low level of mitotic activity in the hemocytes. If this finding is corroborated by the autoradiographic studies, which have not been completed yet, it will certainly bear more intensive investigation. The length of the life cycle, the weights of the bugs, and the percentage survival of the bugs fell within the range of measurements made at lower elevations. It is possible that the length of time the bugs were at the high altitude was not enough for measurable alterations in these parameters. The raw data for the concentrations and the electrophoretic patterns of the hemolymph proteins have not been analyzed for statistical differences between the high elevation and low elevation values.

The cultures of the milkweed bugs were returned to St. Louis from the Jackson Station and another series of tests will be run to compare these bugs with bugs maintained in St. Louis all summer.

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